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said optical sending apparatus generates said optical signal of said plurality of wavelength bands by generating sets of optical signals having different optical powers based on the detection result of the spectrum detecting section and wavelength-multiplexing the sets of optical signals on a wavelength band basis.

REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

I. STATUS OF THE CLAIMS

Claim 34 is amended herein.

In view of the above, it is respectfully submitted that claims 1-41 are currently pending and under consideration.

II. OBJECTION TO THE DRAWINGS

On page 2 of the Office Action, the Examiner indicates that the drawings are objected to because they do not include the following reference sign mentioned in the description: 48.

In view of the accompanying separated Letter to the Examiner Requesting Approval of Changes to the Drawings, corrections to Figures 11 and 14 have been requested. Therefore, the outstanding drawing objections should be resolved.

In view of the above, it is respectfully requested the objection is overcome.

III. OBJECTION TO THE SPECIFICATION

In item 2, on page 2 of the Office Action, the Examiner indicates that the disclosure is "objected to." Moreover, for example, the Examiner indicates that specification contains minor typographical errors.

The specification is amended herein to correct these errors and overcome the objection.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. REJECTION OF CLAIM 34 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claim 34 is amended herein.

In view of the above, it is respectfully submitted that the rejection is overcome.

V. REJECTION OF CLAIMS 1, 3, 5, 14 AND 15 UNDER 35 U.S.C. § 102(A) AS ANTICIPATED BY BERGER OR, IN THE ALTERNATIVE, UNDER 35 U.S.C. § 103(A) AS OBVIOUS OVER SUN IN VIEW OF BERGER

The present invention as recited, for example, in claim 1 relates to an optical amplifying apparatus comprising "wavelength multiplexing means for wavelength multiplexing outputs of said respective optical adjusting means," and "controlling means for performing control so that an output of optical adjusting means for adjusting optical power of shorter wavelength band light among said plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting optical power of longer wavelength band light among said plurality of optical adjusting means."

Berger discloses an amplifier arranged to offset Raman gain. More specifically, Berger discloses preconditioning optical signals prior to transmitting the signals over an optical fiber span as an approach to dealing with Raman gain/tilt. Berger compensates for the Raman tilt by generating a gain that is pretilted opposite to the Raman tilt, and applying the tilted gain to the spectrum of optical signals that are to be transmitted over an optical fiber. The pretilting of the optical signals cancels out the power shift due to the Raman tilt such that the power levels of optical signals will be more or less flat at the end of the fiber transmission span. See Fig. 2 and Figs. 3a-3c in column 3, lines 12-31.

However, Berger does not disclose the claimed controlling means as recited in claim 1 of the present application. For example, Berger does not show that larger wavelength light is controlled any differently than shorter wavelength light. Moreover, Berger does not disclose any means of changing the relationship of the power of shorter wavelength light to the power of larger wavelength light. Further, no portion of Berger shows any different control of the wavelengths before being multiplexed together.

Sun discloses a gain-flattened ultra wide band EDFA for high capacity WDM optical communications systems.

However, Sun does not suggest or disclose any of the features as recited in claim 1. More specifically, Sun does not disclose the claimed controlling means as recited, for example,

in claim 1 of the present application.

Therefore, neither Berger nor Sun, alone or in combination, suggest or disclose the features as recited in claim 1 of the present application.

In view of the above, it is respectfully submitted that the rejection is overcome.

VI. REJECTION OF CLAIMS 16, 17, 26, 27, 28, 29, 30, 32, 35, 36, 39 AND 41 UNDER 35 U.S.C. § 102(A) AS BEING ANTICIPATED BY IWATA

The present invention as recited, for example, in claim 16 relates to an optical sending apparatus comprising "controlling means for performing control so that an output of optical adjusting means for adjusting optical power of shorter wavelength band light among said plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting optical power of longer wavelength band light among said plurality of optical adjusting means."

Iwata discloses a signal light outputting apparatus performing the control of powers and/or wavelengths of signal lights of different wavelengths to be wavelength multiplexed and transmitted, so that the signal lights can be transmitted and received accurately while making transmission characteristics of the signal lights equal to each other.

However, Iwata appears to control the signal light outputs of post amplifiers 14 so that the signal light output of the laser diodes 11 are not varied and equal each other, which is different from the claimed controlling means of the present application. More specifically, for example, Iwata does not suggest or disclose the claimed controlling means for performing control so that an output of optical adjusting means for adjusting optical power of shorter wavelength band light among a plurality of optical adjusting means becomes larger than an output of optical adjusting means for adjusting optical power of longer wavelength band light among said plurality of optical adjusting means as recited, for example, in claim 16 of the present application.

Therefore, Iwata does not disclose the features as recited in claim 16 of the present application.

Independent claims 29, 39, and 41 set forth similar features as recited in claim 16. Therefore, Iwata does not disclose the features as recited in claims 29, 39, and 41.

In view of the above, it is respectfully submitted that the rejection is overcome.

**VII. OTHER REJECTIONS OVER THE COMBINATIONS OF SUN, BERGER,
AND IWATA**

The Office Action includes many other rejections over the combinations of Sun, Berger, and Iwata. The above comments apply for overcoming these rejections.

In view of the above, it is respectfully submitted that these rejections are overcome.

VIII. CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that each of the claims patentably distinguishes over the prior art, and therefore defines allowable subject matter. A prompt and favorable reconsideration of the rejection along with an indication of allowability of all pending claims are therefore respectfully requested.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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December 21, 2001

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please AMEND the paragraph beginning at page 42, line 9, as follows:

A first WDM optical signal separated by the coupler 63 is input to a PD 64 via a fiber grating filter (hereinafter abbreviated as [EBG] FBG) 76 that is a band-pass filter. The PD 64 performs photoelectric conversion on the first WDM optical signal. The central wavelength (central frequency) of the pass-band of the FBG 76 is so set that that the FBG 76 passes only light of channel-s of the S⁺-band WDM optical signal, that is, light of the longest-wavelength channel in the S⁺ band. Therefore, a current value obtained by the PD 64 through photoelectric conversion corresponds to the optical power of the longest-wavelength channel in the S⁺band. The PD 64 outputs the current to an operation unit 68.

Please AMEND the paragraph beginning at page 42, line 21, as follows:

A second WDM optical signal separated by the coupler 63 is input via an [EBG] FBG 77 to a PD 67, where it is subjected to photoelectric conversion. The central wavelength of the pass-band of the FBG 77 is so set that that the FBG 77 passes only light of channel-1 of the S⁺-band WDM optical signal, that is, light of shortest-wavelength channel in the S⁺ band. Therefore, a current value obtained by the PD 67 through photoelectric conversion corresponds to the optical power of the shortest-wavelength channel in the S⁺ band. The PD 67 outputs the current to the operation unit 68.

Please AMEND the paragraph beginning at page 50, line 37, as follows:

As shown in Fig. 12, t optical senders 80-1 to 80-t generate optical signals corresponding to channel-1 to channel-t of the C band, respectively. For example, each of the [optical senders 20-1 to 20-t] optical senders 80-1 to 80-t can be composed of a semiconductor laser for emitting laser beam having a wavelength that is assigned to the associated channel, an MZ modulator for modulating the laser beam with information to be sent out, and a control section for driving and controlling the semiconductor laser and the MZ modulator. Each of the optical senders 80-1 and 80-t is controlled, as to whether to generate an optical signal, through a control signal that is supplied from a monitoring/control circuit 82.

Please AMEND the paragraph beginning at page 54, line 7, as follows:

The L-band WDM optical signal that is input to the GS-EDFA 34B is amplified by the [EDFA 34B] GS-EDFA 34B whose output is controlled by the monitoring/control circuit 85B. The amplified L-band WDM optical signal is input to the WDM coupler 35B.

IN THE CLAIMS:

Please AMEND the following claim:

34. (ONCE AMENDED) The optical transmission system according to claim 29, wherein said optical receiving apparatus comprises a spectrum detecting section for detecting a spectrum of the optical signal and outputting a [detect said ion] result of said detection to the optical sending apparatus, and wherein

said optical sending apparatus generates said optical signal of said plurality of wavelength bands by generating sets of optical signals having different optical powers based on the detection result of the spectrum detecting section and wavelength-multiplexing the sets of optical signals on a wavelength band basis.